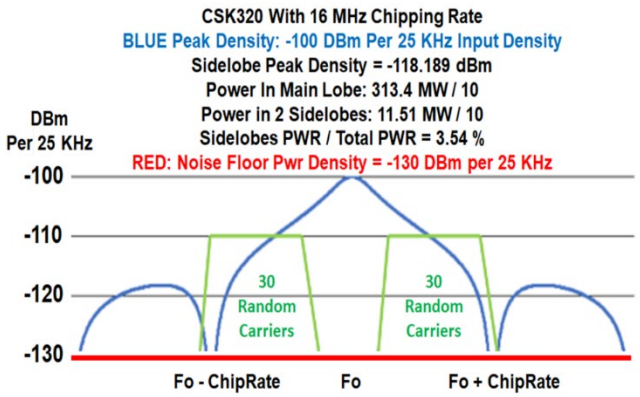
CSK Code Network Carrier Clustering Examples

The shift register PN binary codes of the last 50 years, since the 1964 to 1967 transition period from WWII analog AM and FM information transfer communications and navigation technology to PN shift register codes for digital voice (1967 AF first system by Magnavox Research Lab (MRL), Torrance CA) and the 1979 first satellite based GPS receiver (MRL) and first GPS satellite payload transmitter (ITT, Nutley, NJ), marked the start of shift register base PN code systems and Quadra-Phase-Shift-Key (QPSK) moduation schemes that provided the means of placing 2 orthogonal PN binary codes on the same carrier. This technology has not changed in the last 50 years, UNTIL NOW, with the **Patent No. US 10056937 B1 dated Aug. 21, 2018**, that invented random binary 16ary CSK Code generator technology. This technology makes possible infinite unique and orthogonal CSK code counts for any communications or navigation system. This patent defines the CSK Generator usable with pre-filtered symbol cross-correlation parameters not possible with shift register PN codes.

A general CSK Power Spectral Density Profile for a multi-carrier network is shown in the figure below. The general channel parameters include multiple 1-second epoch codes wherein a total of 4 quadrature CSK symbols provide options are present with QPSK modulation. The channel carrier frequency is defined to derive each carrier frequency. All of these codes can be configured to maximize throughput from 1 Gbps to 2+ Gbps. The multicarrier carrier cluster composite allocation bandwidth for 128 carriers is 100 MHz. System denominators of 10 and quadrature phase shift keying (QPSK) modulation on each unique carrier are a preferred optimized configuration. The figure example show two clusters of 30 carriers each. This example has options for up to 128 carriers (including duplicate carriers). Unique Symbol counts of 16 per CSK Code is instantly defined after CSK Code retrieval from memory. The receive symbol detection process is a deterministic demodulation process. A common precision time reference for 20 microsecond transmissions is made available to all symbol transmitters and receivers synchdronized to a Universal Time reference (50 KHz). The patented CSK Code Generator is capable of near infinite counts of orthogonal single 1-second epochs of orthogonal CSK codes for saving to memory in processing variable formats. There is no longer a limit on families of orthogonal binary codes made available for network use. An example of today's receive MIMO channel is the GPS/GLONASS 20x receive shift-register based navigation channel operating on every cellphone today. The patent CSK Code symbol options eliminate "data bit phase overlays", "short code phase overlays", and very large Ionosphere delay uncertainty common to all satellite-based navigation systems. A 1-second epoch of CSK Codes ensures there are no repeated CSK Codes in the epoch. With CSK symbol dependency on transport 4-bits of data, the repeat probability is very low. Further 16ary symbol encryption in the CSK Code symbol selection process ensures that there are no repeating patterns in any transmission.



Primary CSK Codes Advantages

- The power spectral density of each CSK Code can be used to control the transmit bandwidth
- All CSK Code symbols are detectable with deterministic demodulation (no data overlays on symbols)
- The CSK Code Generator is capable of near infinite orthogonal CSK Codes
- All CSK Code are divisible by 4 to allow CSK half-code pulse-width index shuffles